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APPLICATION NO.	FILED DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,279	11/14/2003	Lorenzo Costa	033965.0021	1104
25461	7590	04/19/2005	EXAMINER	
SMITH, GAMBRELL & RUSSELL, LLP SUITE 3100, PROMENADE II 1230 PEACHTREE STREET, N.E. ATLANTA, GA 30309-3592			MEDINA SANABRIA, MARIBEL	
			ART UNIT	PAPER NUMBER
			1754	

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

MUE

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/713,279	COSTA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Maribel Medina	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 03 January 2005.

2a) This action is **FINAL**.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 21-47 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 21-47 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 14 November 2003 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____.
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

**DETAILED ACTION**

**Claim Rejections - 35 USC § 102 & 103- Maintained**

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 21-47 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over *Mutti et al*, Room-temperature visible luminescence from silicon nanocrystals in silicon implanted SiO<sub>2</sub> layers, Applied Physics Letters 66 (7) 1995, pp 851-853. (*Mutti et al*).

*Mutti et al* disclose silicon nanocrystals luminescent at room temperature; the nanocrystals are supported on silicon. *Mutti et al* disclose that the silicon is luminescent in the red-visible light region with a band peaked beyond 750 nm (See Page 851, 4<sup>th</sup> paragraph and the insert graph of Figure 2). In the event any differences can be shown for the product of the product by process claims 21-38, as opposed to the product taught by *Mutti et al*, such differences would have been obvious to one of ordinary skill in the art as a routine modification

of the product in the absence of a showing of unexpected results; see also *In re Thorpe*, 227 USPQ 964 (Fed. Cir. 1985).

Regarding new claims 41, 42, 45, 46, and 47. Mutti et al is silent with respect to the limitations of these claims. However these properties would have been inherently present in Mutti et al silicon product, since Mutti et al disclose that it is photo luminescent in the red-visible light region as instantly claimed, at a wavelength higher than 750 nm. Furthermore these limitations are typical of the silica, therefore they will be inherently present in Mutti et al silicon product (See applicants own disclosure in page 8, lines 1-10).

The burden shifts to the applicants to show that the product of Mutti et al does not have the limitations/properties of claims 41, 42 and 45-47.

#### **Response to Arguments**

4. Applicant's arguments see Remarks/Arguments, pages 8-9, filed 1/3/05, with respect to Fujita et al have been fully considered and are persuasive. The Rejection to Claims 21-38, under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over *Fujita et al*, has been withdrawn.

5. Applicant's arguments filed on 1/3/2005 have been fully considered but they are not persuasive. Applicants argue: "Mutti, defined in the application on pg. 2 as among the most relevant prior art, discloses a prior art of silicon implanted silica layer which is photoluminescent at ambient temperature. The material is photoluminescent in the blue light region. Although the material is photoluminescent in the red light region, that only occurs if the material is treated at higher than 1000° C. The material is not photoluminescent in the infrared region as is the nanocomposite material defined by the present claims. Moreover, the material

does not show infrared absorbance as does the claimed nanocomposite material. Consequently, Mutti does not describe the claimed subject matter within the meaning of 35 U.S.C. 102. Neither are there any suggestions, reasons or motivation in Mutti whereby a person skilled in the art would arrive at the process of producing the product or the product itself as defined in the present claims. Nothing would lead a person having ordinary skill in the art to modify the Mutti substances so as to have photoluminescence in the red light region or to create a material having photoluminescence in the infrared region at ambient temperature and having infrared absorbance.”

This argument is not convincing. Mutti et al clearly disclose that the silicon material is photoluminescent in the red-visible region at room temperature (See 4<sup>th</sup> paragraph in page 851). The fact that Mutti et al silicon product shows this property after being thermally annealed does not differentiate it from the instantly claimed product, since both products have the same properties.

### **Conclusion**

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

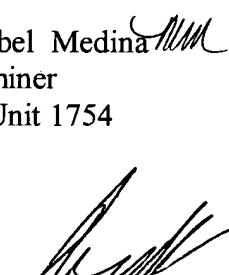
however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maribel Medina whose telephone number is (571) 272-1355. The examiner can normally be reached on Monday through Thursday from 8:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Maribel Medina  
Examiner  
Art Unit 1754

  
STANLEY S. SILVERMAN  
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